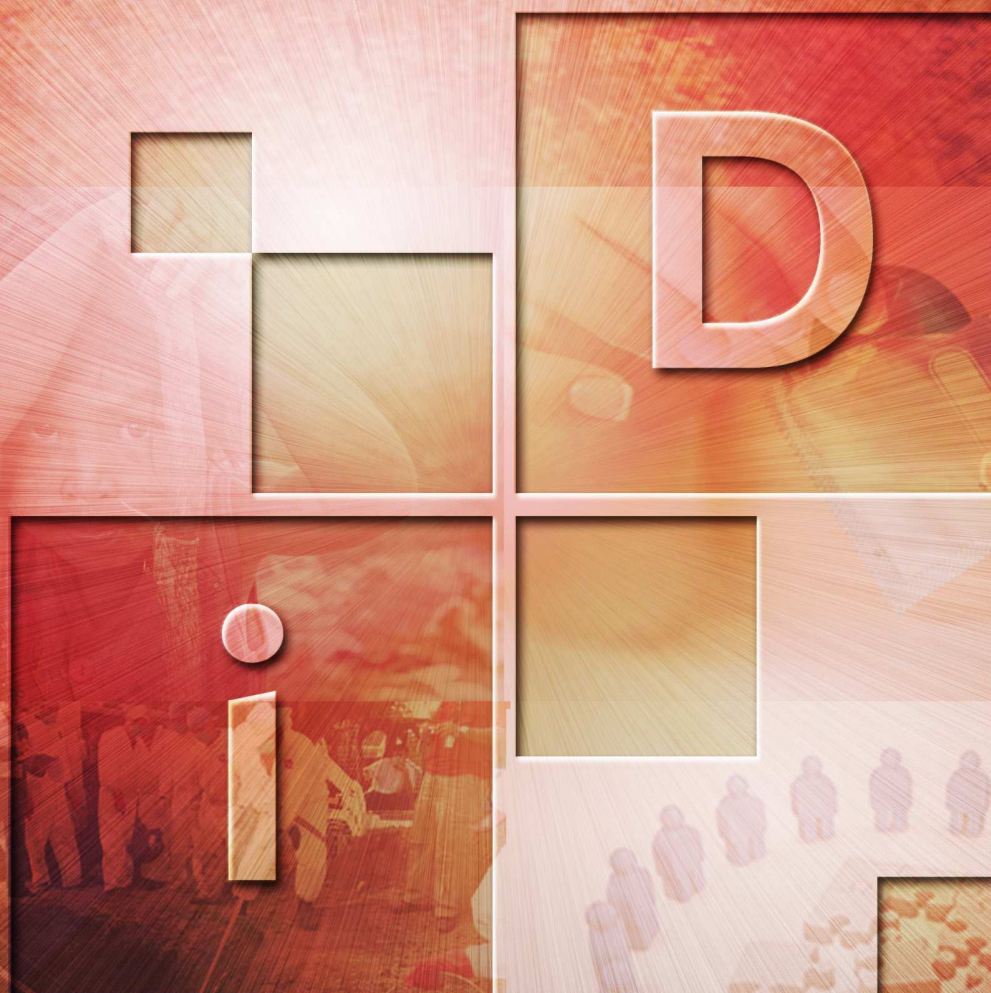


Vol. IV, Number 9, October 2015 • ISSN: 2007-6703



ESPACIO I+D

General translation Michael J. Greces



Digital Journal of the Universidad Autónoma de Chiapas
Indexed in the directory and catalog of **Latindex**,
BIBLAT and **CLASE**

ESPACIO I+D, *Innovación más Desarrollo*

Vol. IV, No. 9, October 2015 — ***English Version***

Indexed in the Directory and Catalog Latindex ,
BIBLAT and CLASE

It is a digital magazine of scientific and cultural
dissemination of multidisciplinary nature of the
Universidad Autónoma de Chiapas (UNACH).
Has a quarterly basis and record:

ISSN 2007-6703

Lucía G. León Brandi
Director

Silvia E. Álvarez Arana
Gabriel Velázquez Toledo
Editors Responsible

Wilber Oswaldo Nucamendi Madrigal
Web and Editorial Design

Diego Mendoza Vazquez
Web Master

Michael J. Greces
General Translation

University Campus, Building D,
Ejido Emiliano Zapata Highway, Kilometer 8
Tuxtla Gutierrez, Chiapas; Mexico. Zip Code 29000
Phone: 01 (961) 214 07 00 • 01 (961) 165 55 89
E-mail: espacioimasd@gmail.com,
espacioimasd@unach.mx

www.espacioimasd.unach.mx

This work is licensed under a
Creative Commons



INDEX

Articles

Notes for the agenda of climate change research in Mexico	6
Infant mortality and poverty in the municipalities of Chiapas	31
The effect of methods of contraception during the transition to adulthood among young people in Chiapas	57
Violence exposed, philosophical considerations on the phenomenon of the mass grave	75
Organizational environment: Monitoring the satisfaction of social actors in an university institution	100
Interstate migration flows. Assessing trends for Mexico. 1950-2010	113
Yellow Pitaya (<i>Selenicereus megalanthus</i>) production system in Boyacá – Colombia	146

THE EFFECT OF METHODS OF CONTRACEPTION DURING THE TRANSITION TO ADULTHOOD AMONG YOUNG PEOPLE IN CHIAPAS

Maria de Jesus Avila Sanchez
marycolef@yahoo.com - maria.avilas@uanl.mx

José Alfredo Jáuregui Diaz
alfjadi@yahoo.com.mx - alfjadi@gmail.com

Autonomous University of Nuevo León



ABSTRACT

The main objective of this study is to advance the understanding of transitions to adulthood among young people in Chiapas and its relation to the use of contraceptives during their first sexual experience. Distinguishing by gender, ethnicity and residency status, the analysis is based on young people born between 1981 and 1998 and is limited to observing the first union as a couple and first child until 29 years of age, with ENJ2010 as the source of information. An event history analysis was applied, a life table model was calculated and a Cox proportional hazards model was developed. The results show that young people from the younger cohorts are delaying the start of married life and the birth of the first child (a) compared to older youth. Also, as expected, it is confirmed that the reduced use of contraception during first intercourse is associated with an increased risk to join as a couple and have their first child

Keywords: *contraception, transition to adulthood, indigenous, youth.*

Both marriage as well as the birth of the first child are key events in the transition to adulthood for young people. While almost all young people experience these events, when they occur, their conditions and consequences vary significantly. Chiapas continues to prevail in early marriage¹ and high fertility among young people (12-29 years), although in the interior of the entity there exists a heterogeneity as a differential result in reproductive behavior between contexts and social groups (Evangelina and Kauffer, 2007 and 2009; Reartes, 2011).

So far there has been limited knowledge about the relationship between contraceptive use during the first sexual intercourse and the delay or advancement of marriage or as a couple and parenthood, mainly due to the shortage of sources of information on youth.

The objective of this investigation is to advance the understanding of transitions to adulthood among young people in Chiapas and its relation to the use of contraceptive methods. To achieve the above we consider three specific objectives, a) examine trends in fertility between 2000 and 2010 and contraception among young people; b) calculating the calendars of sexual initiation, marriage and first child for young people according to their gender, age, ethnicity and context of residence; c) estimate the effect of the use of contraceptive methods in the first relationship in the probability of the occurrence of a first marriage or first child.

It is suggested that an assumption to the transition to adulthood, including the first marriage and parenthood, depends on the context and social group that young people belong to and the use of contraception during the first sexual experience.

The investigation is structured into three sections: The first examines trends in fertility and contraception among young people; in the second, the results of the life table show how they vary by cohort, gender, ethnicity context and the events of interest are

1. Throughout the text the terms marriage and couple will be used indistinctively.

discussed; in the third, the effect of contraceptive use at first intercourse in the risk of occurrence of the first couple or birth of first child for different social groups is analyzed.

METHOD

The primary data source is the National Youth Survey of 2010, which includes questions on age at first marriage and first child. The analysis is based on young people born between 1981 and 1998, which also examines the transition to the age of 29. There is a comparison of men with women, those born in the years 1981-1986 with those from 1987-1998 cohort, the groups who speak an indigenous language with those who do not, and those living in an urban context with those residing in non-urban areas².

The study is based on a theoretical and methodological approach over a lifetime. Event history analysis models are a strategy that do not require assumptions of proportionality and enables the use of fixed variables and time variables (Allison, 1982). The unit of analysis is the year / person since the answers to the duration of the events are usually in years. This approach ensures the appropriate estimates of standard errors and significance tests (Petersen, 1991).

Based on the above the estimates of the life table were made, in particular the survival function using the method of Kaplan and Meier in order to determine how to vary the timing of the first marriage and first child of young people from each one of the social and cultural groups. The Log-Rank test and Wilcoxon (Breslow) tests were also applied to examine the equality of survival functions and

2. The urban locations are those that have more than 15,000 inhabitants, while the non-urban areas are defined as those with less than 15,000 people.

determine if there is a significant difference ($P < 0.05$) between the survival curves (Hosmer and Lemeshow, 1999).

A Cox proportional hazards model was developed to estimate the probability of having used any contraceptive method at first intercourse and the risk of first marriage or the birth of the first child (a) for different social groups.

RESULTS

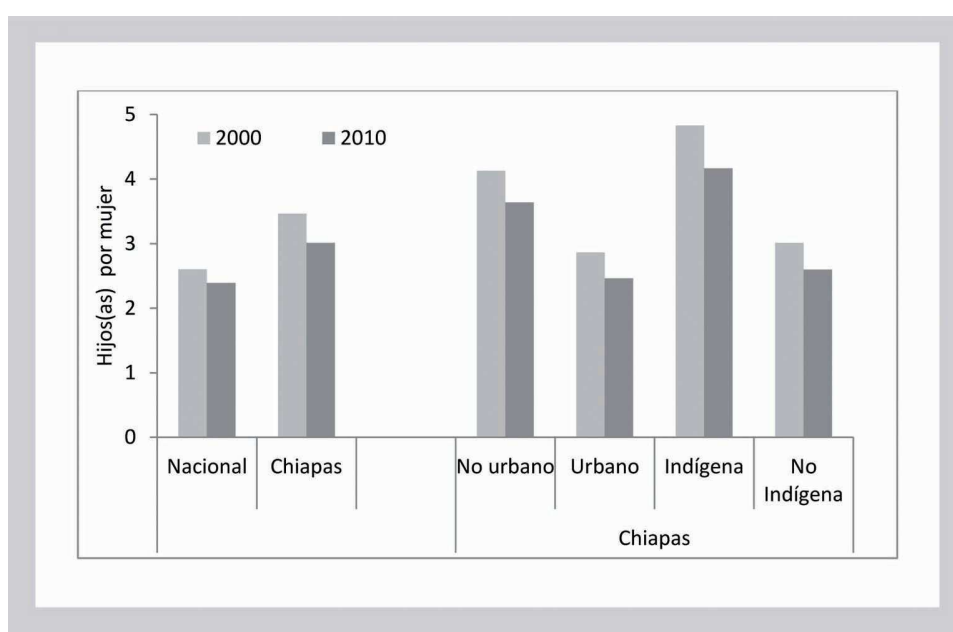
Fertility trends and contraception

Chiapas is at an early stage of the fertility transition along with Oaxaca and Guerrero (CONAPO, 1999), although it is still higher than that of Mexico as a whole for 2010 which was 2.4 children per woman. Through the diversity of reproductive patterns presented by women it can be noted that within Chiapas there are differences in the speed and magnitude of fertility among different social groups, so we can say that Chiapas is still a model with at least two transitions of fecundity, which have urban and non-indigenous women showing a low level of fertility and the other, followed by rural and indigenous women with an incidence of high fertility (see Figure 1). Thus, urban women register a total fertility rate (TFR) in 2010 of 2.5 children and 2.6 for non-indigenous children, a figure that rises in non-urban women to 3.6 children to 4.2 children among indigenous women.

Because the TGF in Figure 1 indicate that each of the social groups is at various stages of fertility transition, it is important to consider the route that each social group has made to reach this stage of transition which in interaction with other processes, have brought profound changes in the organization of the course of life of women in Chiapas although in an uneven way for certain social groups, linked to differential access to education, work, health

and methods to limit fertility. According to the census of 2010 in Chiapas, indigenous women have only 3.7 years of schooling while for non-indigenous women this amounts to 6.4 years. This gap is also apparent between urban women at 7.8 years for nonurban women at 4.6 years. This is why there persist enormous social and cultural inequalities that affect the fertility of women.

Figure 1. Total fertility rate according to different areas and social groups



Source: Own calculations based on the XII and XIII Population and Housing Census, INEGI.

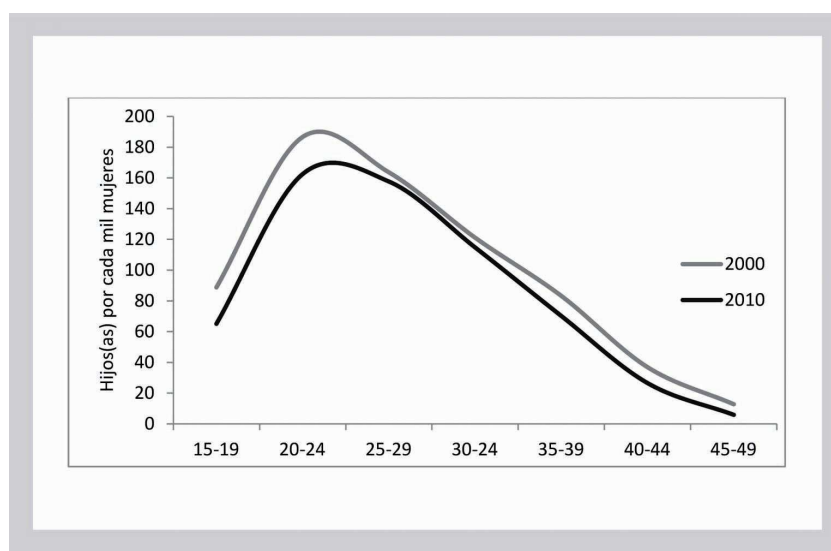
Chackiel and Scholnick (2004) point out that it is necessary to know the extent of delayed marriage or the birth of the first child because both behaviors are conducive to the falling birth rate in accordance with the principles of the fertility transition.

Specific fertility rates in Figure 2 show evidence of both behaviors. There is a slight increase in the age at first birth but adolescent fertility remains high and women in Chiapas continue to

have their children at young ages, between 20 and 24 years of age, and then use some method of birth control, in some cases permanently.

According to the ENADID 2009, the method of bilateral tubal occlusion is the method most often used by women in Chiapas. 55% of women have used it to prevent future pregnancies, which is why on the left side of the graph representing the last stage of the reproductive lives of women, there seems to be little change between 2000 and 2010.

Figure 2. Specific fertility rates by age for Chiapas, 2000-2010.

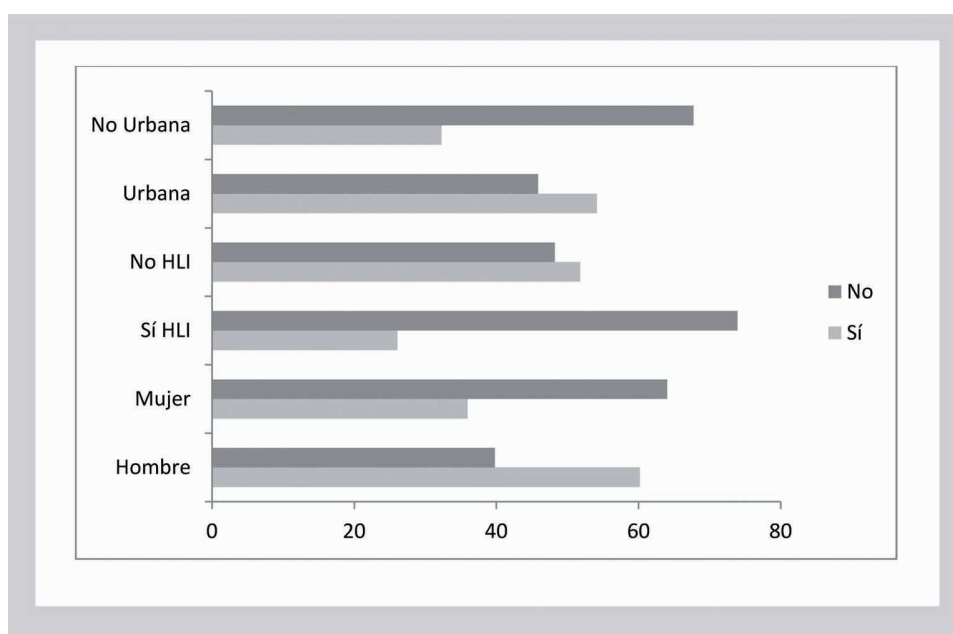


Source: Own calculations based on the XII and XIII Population and Housing Census, INEGI.

For young people who have had sex according to the National Youth Survey 2010, 48.1% have used some form of contraception for their first sexual intercourse while 51.9% did not. As for sex, Figure 3 shows that men used contraception in a greater proportion compared with women during their first intercourse, 60.2% versus 35.9%. The lower use of contraceptives for women

compared to men is associated with gender inequalities, which sets a low bargaining power for women and prevents them from taking preventive measures against early and, in some cases, unwanted pregnancies.

Figure 3. Frequency of use of contraception at first intercourse of young people by gender, ethnicity and background, 2010.



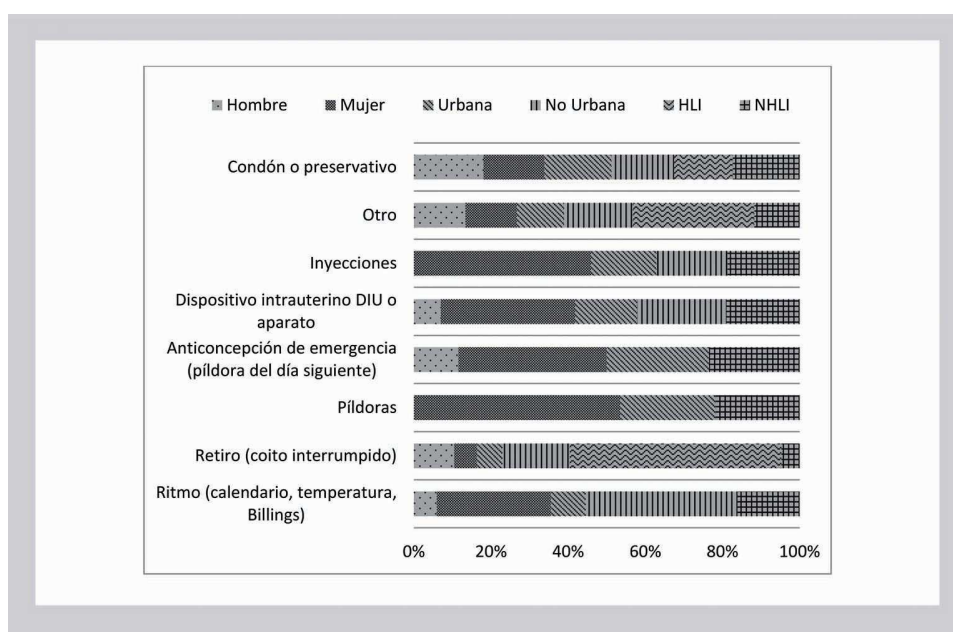
Source: own calculations based on the National Survey of Youth, 2010.

For context, young people living in an urban locality used contraceptives in their first intercourse in greater proportion compared to those living in non-urban areas, 52.1% and 32.3%, respectively. According to ethnicity, the proportion of young people who are not indigenous language speakers who used contraceptives was nearly double that of indigenous language speakers (51.8% and 26.1%, respectively). The unequal power relations between men and women coupled with poverty and other cultural factors influences the non-use of contraception at first intercourse of certain

groups of young people in Chiapas such as the non-urban and indigenous youth, which increases their vulnerability to pregnancy at first sexual intercourse.

Of the young people who used contraception at first intercourse, the type of contraceptive used is shown in Figure 4. Thus, the most frequently used were condoms at first intercourse. This was most mentioned by men (91.1%) than women (79.6%). This was even higher for urban youth (87.9%), followed by non-indigenous (87.6%) and non-urban youth (81.7%). The lowest percentage of condom use corresponded to indigenous youth (76.7%).

Figure 4. Type of contraceptive used by the young people in their first sexual encounter by gender, ethnicity and background, 2010



Source: own calculations based on the National Survey of Youth, 2010

After condoms, traditional methods were the most often used such as the rhythm method (timing, temperature, Billings) mainly

by women and non-urban youth while withdrawal (coitus interruptus) was mentioned by indigenous youth. It should be noted that among young people in Chiapas who used some method of protection there still prevails the use of traditional methods with little or no efficacy in preventing pregnancy and sexually transmitted diseases.

Calendar of entry into marriage and first child

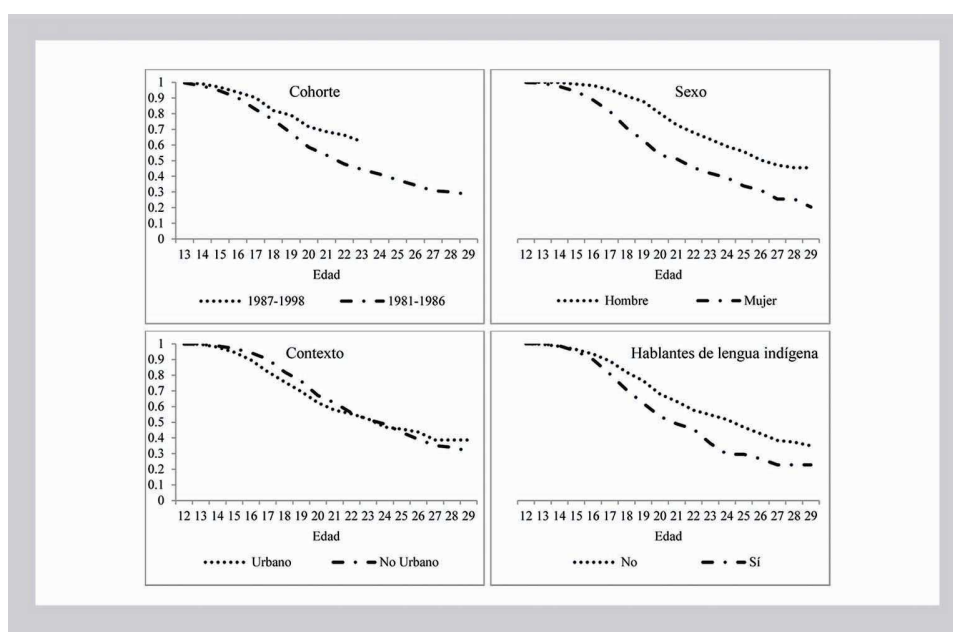
An analysis of the calendar permits us to appreciate the timing of marriage and first child for Chiapas youth (see Figure 5). The ages correspond to the values of 5%, 25%, 50% and 75% of the age distribution of the events according to the cohort, gender, background and ethnicity.

In Figure 5 a small progression to later ages at first marriage can be seen. The youth of the cohort 1987-1998 have a one-year delay in the formation of the union of a couple compared with the 1981-1986 cohort. Meanwhile, a quarter of the youth of the younger cohort presented a delay of two years in relation to the advanced cohort. While half of young people in the latest cohort had experienced marriage or a couple at the age of 21, 50% of the youth of the younger cohort had not yet experienced the event at age 29.

A schedule for the formation of the couple is significantly different by gender, being women more precocious than for men with 25% of women having formed a union at age 18- two years earlier than men - while 75% of women reported their first marriage at age 28, more than the three-quarters of men who at age 29 had not experienced the event. This shows that despite the increase in schooling, it is possible to see if the proportion of women with post-primary education belong to the generation 1941-1955 that was 4.7% compared with that of 1981-1998 which reached 41.8%, which affected the increase in the incorporation of young women to work. Despite progress in Chiapas society, there continues to

dominate a clear sexual differentiation of work and a strong family and social control, where young women are more inclined to marry early in the life cycle if they want to exercise their sexuality without the social disapproval, but above all to exercise motherhood and parenting, which remains central to the life project of young women in Chiapas.

Figure 5. Age at 5%, 25%, 50% and 75% of young people had their first marriage or couple according to cohort, gender, and ethnicity context, Chiapas, 2010



Source: own calculations based on the National Survey of Youth, 2010.

Note: ¹p= Test Log-Rank; ²p= Test Wilcoxon (Breslow). *p<.05; **p<.01; ***p<.001.

Ethnicity makes a significant difference in the timing of marriage or as a couple. The speakers of indigenous languages form a junction earlier than that of young people who are not indigenous language speakers. Half joined as a couple for the first time at age 20, four years earlier than non-indigenous youth. This result is

associated with a form of social organization based on a cultural model of traditions and customs, where sexuality is intrinsically linked to the partnership.

The survival curve of the first child shows an early onset of fertility of young people in Chiapas, since 5% had their first child at 16 years of age, a quarter at 20 years old and half experienced the birth of their first child at 24 years of age. In addition, 75% of young people in Chiapas had not had her first child by age 29.

The results from the log-rank and Wilcoxon tests reject the hypothesis of equality for survival curves by cohort, gender and ethnicity. While the hypothesis is accepted for the context of residence, the difference in the calendar for the first child for urban and non-urban youth was not significant in both tests, only in Log-Rank (Figure 5).

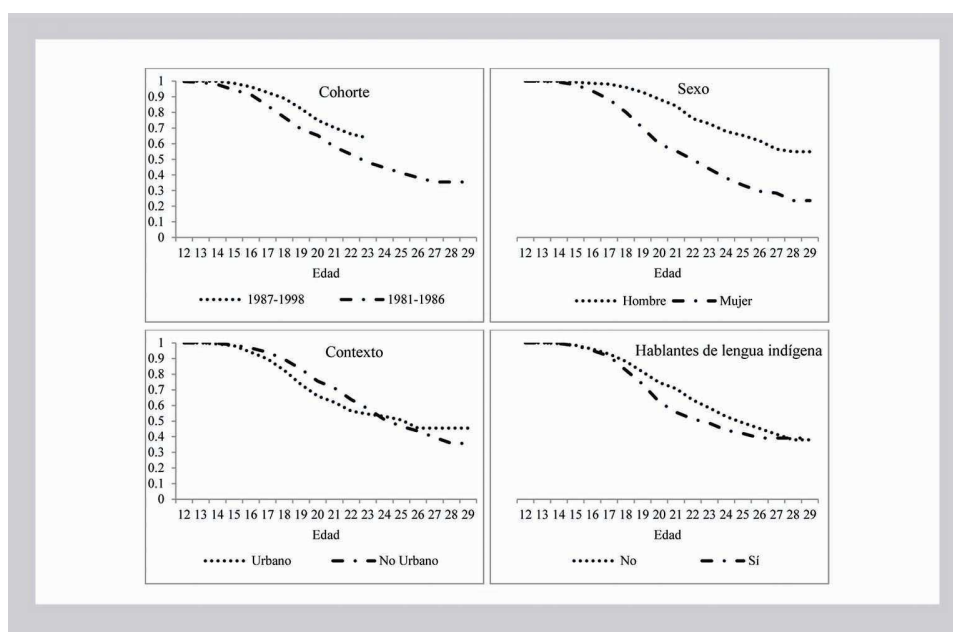
There can be observed an early onset of fertility in the younger cohort and a delay in the calendar of the arrival of the first child as the life cycle of young people (see Figure 5) advances. On the one hand, 5% of the young people of the two cohorts had their first child at age 16, and on the other, a quarter of the youth of the younger cohort have delayed the age at which they have their first child a year compared to the advanced cohort, at 19 and 20 years of age, respectively.

Women enter into reproductive life earlier than men. In figure 6 a gap of three years of advancement of women can be seen in comparison with men. 5% of women had their first child within 15 years of age, half at 22 and three quarters at age 28, while 5% of men had at age 18, half at 22 years and 75% had not yet experienced the event at age 29.

Young speakers of indigenous languages show an entry to an earlier reproductive life compared with non-indigenous youth, with a difference of one year compared with indigenous youth. A quarter of young indigenous people had their first child at age 19 while the same proportion of non-indigenous youth had taken a year later. Meanwhile, half of the young speakers of indigenous

languages had their first child at 23 years old while non-indigenous youth did at age 24.

Figure 6. Age at which 5%, 25%, 50% and 75% of youth had their first child within a couple in accordance to cohort, gender, and context of ethnicity, Chiapas, 2010.



Source: own calculations based on the National Survey of Youth, 2010.

Note: ¹p= Test Log-Rank; ²p= Test Wilcoxon (Breslow). *p<.05; **p<.01; ***p<.001.

The most important changes experienced by young people in Chiapas of the two cohorts were associated with a slight delay in the entry age at first intercourse, first marriage or as a couple, and the first child between the youth of the younger cohort 1987 -1998 compared to older youth cohort 1981-1986. In addition there was a clear differentiation in the schedules of entry into the three events analyzed by gender and ethnicity which was reflected in an earlier entry to sexuality, marriage and reproduction of women and young speakers of indigenous languages compared with men and

non-indigenous language speakers. It is noteworthy that no evidence of differentiation was found in calendars in both events between urban and non-urban contexts.

Proportional hazards with the Cox model

The proportional hazards of Cox model was conducted for young people who say they used a contraceptive method during their first intercourse. It is important to monitor the effect of the cohort because contraceptive use has increased over time (Table 1). As expected, when the cohort of birth control, contraceptive use, and sexual initiation is controlled, there is an association with a reduced risk of forming a couple or having a first child at each age.

Table 1. Cox proportional hazards model (Relative Risk) of first marriage or couple and first child, Chiapas.

	First marriage	First child
Birth cohort		
1987-1998 (Ref.)	---	---
1981-1986	2.15** (0.005)	2.73*** (0.000)
Use of contraception at the beginning of sexual activity	0.472** (0.003)	0.371*** (0.001)
Log verisimilitude	-2082.9113	-1899.8983
Prob> chi2	0.0000	0.0000
Wald chi2	139.52	165.87
*p<.05; **p<.01; ***p<.001		

Source: own calculations based on the National Survey of Youth 2010

Contraceptive use reduces the risk of a first child of a magnitude greater than the risk of first marriage or union, therefore young people who did not use contraception during their first intercourse have a 63% higher risk of having a first child and 53% higher risk of joining as a couple, while the birth cohort also has

a significant relationship with the union as a couple and having a first child. There is an increased risk of having a first child and to join as a couple 2.7 and 2.1 times, respectively.

If the effect of contraceptive use in the various transitions to adulthood of each of the different social groups (see Table 2) is analyzed, it can be seen that the effect of not using a contraceptive method during first intercourse and the risk of uniting as a couple according to social categories is in a range of from 56.6% for women and up to 81.5% for younger cohort 1987-1998. Meanwhile, the effect of not having used contraception at first intercourse and risk of having a first child for different social groups increased from 69.9% for women up to 83.2% for the younger youth cohort 1987-1998.

Based on the above, it is confirmed that the non-use of contraception at first intercourse increases strongly and significantly the risk of onset of both reproductive trajectories, but with greater intensity of the first child, compromising the development of a life plan beyond motherhood for all young people regardless of social group, although it is higher for women and young people from the younger cohort (1987-1998), a situation that limits or restricts the life project of these youth in a particularly highly marginalized state such as Chiapas.

Table 2. Cox proportional hazards model (relative risk) contraceptive use at first intercourse at different transitions by social groups, Chiapas.

First Marriage	First Birth
----------------	-------------

1981-1986 cohort (No)		
Yes	.360*	.263*
	(0.029)	(0.036)
Cohort 1987-1998 (No)		
Yes	.185***	.168***
	(0.000)	(0.000)
Gender Female (No)		
Yes	.434*	.301*
	(0.044)	(0.023)
Gender Male (No)		
Yes	.367***	.291***
	(0.007)	(0.000)
Non Urban Context (No)		
Yes	.272*	.205*
	(0.041)	(0.018)
Urban Context (No)		
Yes	.380*	.280*
	(0.043)	(0.025)
Indigenous Language Speaker (No)		
Yes	.345*	.221*
	(0.041)	(0.029)
Not an indigenous language speaker (No)		
Yes	.370*	.273*
	(0.036)	(0.023)
Log verisimilitud	-2082.9113	-1899.8983
Prob> chi2	0.0000	0.0000
Wald chi2	151.82	156.38
*p<.05; **p<.01; ***p<.001		

Source: own calculations based on the National Survey of Youth 2010

CONCLUSIONS

The calendar age of first marriage or couple and the birth of the first child appears to be changing in Chiapas. In this manner the risk of experiencing a couple or first marriage and first birth seems to have slowed in the younger cohorts compared to older cohorts.

The formation of the couple and the birth of the first child show significantly different calendars by sex, with women having an earlier age for the first marriage and reproductive life. There is similar behavior to the indigenous language speakers that also show an earlier age of entry into marriage or parenthood as compared with non-indigenous language speakers. It should be noted that according to the statistical tests that were applied, there is no observed significant difference in the calendar of events of interest among young people living in an urban area compared to those residing in non-urban locations.

The hypothesis that the use of contraception during first intercourse has an effect on the risk of occurrence of the first marriage or as a couple and the first child to young people in Chiapas was raised. As expected, when controlling for the birth cohort, non-use of contraceptives during sexual initiation was associated with an increased risk of joining as a couple or having a first child at each age, a risk that increases in the case of women and youth. This helps to show that among young people in Chiapas there continues to predominate asymmetric power relations between men and young women who set a low bargaining power for women in the relationship which prevents them from adopting a conduct of prevention, strengthening their vulnerability to an early and in many cases unwanted pregnancy.

While the case of the youth of the 1987-1998 cohorts are delaying marriage and their first child, it is however in the case of not using birth control during the first sexual intercourse that there is an elevated risk of getting married and having a first child at early ages, demonstrating that age influences vulnerability before situations of reproductive risk.

BIBLIOGRAFÍA

- Evangelista, A.** y Kauffer, E. (2007). Jóvenes y vih/si da: contextos de vulnerabilidad en comunidades de la Región Fronteriza de Chiapas. En R. Tinoco, M. E. Martínez y A. Evangelista (coords.), *Compartiendo saberes sobre el vih/sida en Chiapas*. pp. 77-98. México: Instituto de Salud del Estado de Chiapas.
- Evangelista, A.** y Kauffer, E. (2009). Iniciación sexual y conyugal entre los jóvenes de tres municipios de la región fronteriza de Chiapas. *La Ventana*, 4 (30): 181-221.
- Reartes, D.** (2011). La comunidad y la ciudad como referentes en la construcción social de riesgos frente al VIH-Sida entre jóvenes estudiantes hablantes de lengua indígena de los Altos de Chiapas. *Desacatos* (5): 59-74.
- Petersen, T.** (1991). The Statistical Analysis of Event.Histories. *Sociological Methods and Research*, 19, 270-323.
- Hosmer, D.W., Lemeshow, S.** (1999) *Applied survival analysis: regression modeling of time to event data*. New York: John Wiley and Sons, Inc.
- CONAPO.** (1999). *La revolución silenciosa; descenso de la fecundidad en México, 1974-1999*. México: Autor.
- Chackiel, J.** y Shcholnik, S. (2004). América Latina: los sectores rezagados de la transición de la fecundidad. *La fecundidad en América Latina: ¿transición o revolución?* CEPAL. Santiago de Chile.